REMARKS

Claims 1, 2 and 4-15 are pending in this application. By this Amendment, claims 1, 2 and 4-8 are amended and claim 3 is canceled.

Claims 1 and 7 are amended to recite the subject matter of canceled claim 3.

Claim 1 is also amended to replace the term "separate substrate" with the term "separator substrate."

Claims 1, 2 and 4-8 are amended to delete the phrase "characterized by" and/or replace the phrase "characterized in that" with "wherein."

Claim 8 is also amended to be in independent form, and to include the features of the separator substrate and film coating member recited in claim 1.

No new matter is added.

Claim Objection

Applicant has amended claim 1 to replace the term "separate substrate" with the term "separator substrate" as suggested by the Patent Office.

Applicant requests withdrawal of the objection.

Rejections Under 35 U.S.C. §102(e)

Relying Upon Fischer

Claims 1-4 and 9-13 are rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Fischer (U.S. Patent Application Publication No. 2003/0180598). Separately, claims 7, 14 and 15 are rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Fischer. Applicant traverses the rejections.

Claim 1

Claim 1 as amended recites a fuel cell separator comprising a separator substrate made of metal which has at least one open portion that passes through the separator substrate through which a fluid can pass provided in a predetermined position. Claim 1 also recites

that the film coating member is adhered to at least a portion of the separator substrate via at least one treatment selected from the group consisting of heat welding, high-frequency welding, ultrasonic welding, and adhesion by an adhesive.

Fischer describes a bipolar plate with a metal core having two plastic layers bilaterally overlying and enclosing the metal core (paragraph [0036]). Fischer describes that the bipolar plates are fabricated by injection molding or compression molding the plastic. The Patent Office alleges that the plastic itself, when molten, is analogous to the adhesion by an adhesive recited in claim 1.

Applicant submits that the injection molding and/or compression molding described by Fischer is materially different than the heat welding, high-frequency welding, ultrasonic welding, and adhesion by an adhesive recited in the method of claim 1. As described at paragraph [0072] of the specification, when adhesion by an adhesive is used, the adhesive is applied between the separator substrate and the film coating members. Adhesion by an adhesive thus allows the film to be adhered to the separator substrate without deterioration of the corrosion resistance in a predetermined area including an open portion of the separator substrate.

The compression molding and/or injection molding of Fischer does not include use of adhesion by an adhesive of the separator substrate and the film coating members, as recited in claim 1, and does not include any of the other adhering treatments recited in claim 1. The method described by Fischer results in a deterioration of the corrosion resistance in a predetermined area including an open portion of the substrate. As described at paragraph [0006] of the present specification, with current (at the time of invention) surface treatment technology, it is difficult to coat portions such as the peripheral edge portion of the manifold properly. Such methods resulted in a deterioration of the corrosion resistance in particular at

the peripheral edge portion. Injection molding and compression molding were, at the time of invention, subject to this difficulty.

The separator substrate described by Fischer thus would not have been expected to provide good adhesion between a film and a substrate, and thus would not have been expected to have excellent corrosion resistance against the corrosive atmosphere of the battery. Specifically, the separator substrate described by Fischer would not have been expected to provide the excellent corrosion resistance of the open portion for forming the manifold, especially at the peripheral edge portion.

The fuel cell separator recited in claim 1, wherein the film coating member is adhered by at least one treatment selected from the group consisting of heat welding, high-frequency welding, ultrasonic welding, and adhesion by an adhesive, is thus materially different from the bipolar plate of Fischer, which utilizes injection molding and/or compression molding.

Fischer thus does not anticipate the fuel cell separator of claim 1 because Fischer does not describe each of the features recited in claim 1.

Claim 7

The method of claim 7 recites adhering the film coatings to a portion of the separator substrate. As described in the present specification, this may be accomplished by a number of methods, such as for example, heat welding, high-frequency welding, ultrasonic welding and adhesion by an adhesive. In the case where adhesion by an adhesive is used, the adhesive is applied between the separator substrate and the film coating members. Each of the treatments recited in claim 1 allows the film coatings to easily be adhered to a portion of the separator substrate, without a deterioration of the corrosion resistance, in particular at the peripheral edge portion.

As discussed above, Fischer does not describe a method wherein the film coating member is adhered by at least one treatment selected from the group consisting of heat welding, high-frequency welding, ultrasonic welding, and adhesion by an adhesive.

Fischer therefore does not anticipate the method of claim 7 for at least the above reasons.

Applicant respectfully requests withdrawal of the rejections.

Relying Upon Uejima

Claims 1-6 and 9-13 are rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Uejima (U.S. Patent Application Publication No. 2004/0106032). Separately, claims 7, 14 and 15 are rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Uejima. Applicant traverses the rejections.

Claims 1 and 7 are patentable over Uejima because Uejima fails to describe a separator substrate which has at least one open portion which passes through the separator substrate. In addition, Uejima fails to describe adhering the film coating member to a portion of the separator substrate, wherein the film coating member is adhered by at least one treatment selected from the group consisting of heat welding, high-frequency welding, ultrasonic welding, and adhesion by an adhesive.

Claim 1

Uejima describes separators comprising a metal substrate coated with a polymer film. The Patent Office alleges that the separators of Uejima inherently have open manifold portions. However, Uejima describes no such openings. As shown in the Figures of Uejima, for example in Figure 2, the configuration of the separators and fuel cells shows that the separators do not have an open portion. The substrate of Uejima is described as being fabricated by bending to create channels through which gas may flow. The Patent Office

alleges that such structures are analogous to the open portions of the substrate of claim 1. Such configurations, however do not have an open portion.

The separators of claim 1 require a separator substrate with an open portion that passes through the separator substrate through which a fluid can pass. As shown in the Figures (for example, Figures 1-4 and 16), and described in the specification of the present application, the open portion allows fluid to pass through the separator substrate, i.e., from one side to the other.

Uejima does not describe a configuration where an open portion passes through the substrate, allowing a fluid to pass from one side of the substrate to the other. Rather, the groove-like passages of Uejima form a *channel* through which the fluid may flow. As shown in the Figures of Uejima, the channel is formed by a single surface (i.e., one side) of the separator, and there are no open portions passing through the separator substrate through which a fluid may pass.

Uejima thus does not anticipate the fuel cell separator of claim 1 because Uejima does not describe each of the features of claim 1.

Claim 7

The methods described by Uejima require electrolytic polymerization to form polymer coatings on the substrate. This method involves performing electrolysis in an aqueous solution, whereby coatings of conductive polymer are synthesized electrochemically directly on the surfaces of the metal substrate. Such a methodology is analogous to other coating methods such as spray coating or dipping, as described in the Description of Related Art portion of this application, and is not analogous to the treatments recited in claim 1, by which the film coating is adhered.

The method of claim 7 recites adhering film coating member to a portion of the separator substrate. The adhering step of claim 7 is limited to the treatments recited in claim

1, i.e., heat welding, high-frequency welding, ultrasonic welding, and adhesion by an adhesive. The method of claim 7 is thus different from the method of Uejima because Uejima does not describe adhering a film member to a portion of the separator substrate by the treatments recited in claim 7, as discussed above.

Uejima thus does not anticipate claim 7 because Uejima does not describe each of the features of claim 7.

Applicant requests withdrawal of the rejections.

Rejections Under 35 U.S.C. §103(a)

Relying Upon Fischer In View Of Middelman

Claims 5 and 6 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Fischer in view of Middelman (U.S. Patent Application Publication No. 2004/0023095).

The Patent Office cites Fischer as above. The Patent Office cites Middelman as allegedly describing metals other than stainless steel and titanium as being suitable for use as substrates in fuel cell separators.

Fischer is discussed above.

Middelman does not remedy the deficiencies of Fischer regarding claim 1, because Middelman does not describe a film coating member adhered by at least one treatment selected from the group consisting of heat welding, high-frequency welding, ultrasonic welding, and adhesion by an adhesive. Rather, Middelman describes a method of making a cell plate having a non-conducting polymer edge around the conducting area. The conducting area, or plate, is placed in a mold, and the non-conducting polymer is then injection-molded to surround the plate. This process is similar to that described by Fischer, and is also not a treatment selected from the group consisting of heat welding, high-frequency welding, ultrasonic welding, and adhesion by an adhesive, as required by claim 1.

The combination of Fischer and Middelman thus fails to describe each of the features of claim 1. Therefore, there would have been no reason or rationale for modifying the separators of Fischer and/or Middelman to have arrived at the fuel cell separators of claim 1 with any reasonable expectation of success.

Claims 5 and 6 are therefore not obvious over Fischer in view of Middelman.

Applicant requests withdrawal of the rejection.

Relying Upon Fischer

Claim 8 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Fischer.

The Patent Office cites Fischer as above, and further alleges that it would have been obvious to have selected the temperature, pressure and duration recited in claim 8.

Claim 8 has been amended to recite the structural features of the separator substrate and film coating member recited in claim 1, discussed above.

Applicant submits that the injection molding and/or compression molding described by Fischer is materially different from the thermo-compression recited in the method of claim 8. As described at paragraphs [0073]-[0090] of the present specification, the thermo-compression bonding method requires that the film coating member corresponding to the shape of the fuel cell separator be prepared, and then set on (or joined with) the separator substrate, and the two are then affixed together. Various methods may be utilized to align the film coating member and the separator substrate. After the film coating member and separator are fitted together, pressure is applied so that the portion of the film coating member corresponding to at least the peripheral edge portion of the open portion of the substrate is thermo-compression bonded thereto.

Thermo-compression bonding is thus different from the injection molding and/or compression molding described by Fischer, because the methods described by Fischer do not include the use of a formed film coating member in the adhering step.

The injection molding and/or compression molding described by Fischer requires the use of a molten resin material, as admitted by the Patent Office at page 3 of the Office Action. The molten resin material is then used in a fabrication process in which the molten resin is formed around or over the metal core, to simultaneously shape it and adhere it. Fischer thus does not describe a method comprising a thermo-compression process as required by claim 8.

As discussed above, the process of Fischer results in a deterioration of the corrosion resistance in a predetermined area including an open portion of the substrate.

Fischer thus does not anticipate the method of claim 8 because Fischer does not describe each of the features of claim 8.

Applicant requests withdrawal of the rejection.

Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2 and 4-15 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Daniel S. Kasten
Registration No. 45,363

JAO:DSK/tca

Date: June 30, 2009

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461